

What is claimed is:

1. Method for controlling the drying effect of an equipment layout used in making a coated web of paper or board, the layout comprising at least one coater station (1) and at least one dryer (2-6), the method comprising the steps of

10 - applying a liquid-containing coating furnish to the surface of the web (8),

15 - drying the web (8) coated with said coating furnish through evaporating said liquid off from the web until the moisture content of the web (8) reaches a desired value,

20 - compiling, for each one of those portions of the coater section in which moisture is evaporated from the web (8), a specific evaporation rate submodel suited to compute the amount of liquid removed within the confines of said portion, and

- determining the needed overall evaporation effect,

25 c h a r a c t e r i z e d i n t h a t

- said specific evaporation rate submodels are chained into a composite evaporation rate model,

30 - the needed overall evaporation effect is divided with the help of the composite model between the dryers of the equipment layout, and

09914657-092404
T01260-4597660

- the model is used in the determination of new control variable set values to be issued to said dryers.

5

2. Method according to claim 1, characterized in that the evaporation effect of one dryer of the equipment layout is controlled with the help of the composite evaporation rate model and the effect of the other dryers is set to a fixed value.

10

3. Method according to claim 1, characterized in that the evaporation effect of at least two dryers of the equipment layout are controlled with the help of the composite evaporation rate model.

15

4. Method according to claim 1, characterized in that at least the final moisture content of the web (8) is measured, the measured moisture value is compared with the moisture set value and, using the composite model, new set values of evaporation rate are computed to be issued to said dryers.

20

5. Method according to claim 4, characterized in that the web moisture is measured in at least one point along the web travel preceding said final moisture content measurement in order to determine at least one intermediate moisture content value and, utilizing said measured moisture value, new set values of evaporation rate are computed to be issued to at least those dryers that are located upstream prior to said intermediate moisture measurement point.

30

09014657 092401

6. Method according to claim 1, c h a r a c t e r -
i z e d in that first the initial moisture content of
the web and the amount of water applied thereto are
5 determined, the needed overall evaporation is computed
and, using said composite model, the evaporation rates of
said dryers are controlled to set values that render the
end product a desired moisture content.

7. Method according to claims 5 and 6, c h a r a c -
t e r i z e d in that effects of said dryers are con-
trolled on the basis of model computation and measurement
results.

8. Method according to claim 2 for correcting the model
parameters of the specific evaporation rate submodels of
dryers in an equipment layout,

c h a r a c t e r i z e d in that

- one dryer of the equipment layout is set to oper-
ate under the control of the composite evaporation
rate model,

- the other dryers of the equipment layout are set
to operate at a fixed evaporating effect,

- the control signals of the model-controlled dryer
are varied,

- the web moisture value obtained from the composite
evaporation rate model is compared with a measured

09914557 "092401

SUB
A₄ 10

web moisture value, and

- corrected values of specific evaporation rate
model parameters are computed on the basis of the
5 difference between the measured value and the esti-
mate value computed with the help of the model for
the dryer selected to be run in the model-controlled
mode.

10 9. Method according to claim 8, c h a r a c t e r -
i z e d in that the control signals of said model-con-
trolled dryer are changed in a stepwise manner or by
superimposing a pseudo-random binary signal (PRBS) on the
set values.

15 10. Method according to claim 1, c h a r a c t e r -
i z e d in that the output values obtained from the
specific evaporation rate submodel of a preceding dryer
of an equipment layout are used as the input values in
20 the specific evaporation rate submodel of the next
successive dryer.

25 11. Method according to claim 4, c h a r a c t e r -
i z e d in that the needed change in the evaporation
effect is divided between the dryers selected to be con-
trolled with the help of the composite model propor-
tionally in ratios determined by preset weighting
factors.

30 12. Method according to claim 1 for controlling the
evaporation effect in an equipment layout comprising at
least one coater station with its associated dryers,

09044657.092404
T04260 25947660

characterized in that the composite evaporation rate models describing the behavior each subsystem comprising a coater station and the associated dryers are chained by submitting to the preceding composite model the web moisture value measured downstream after the next successive subsystem.

13. Method according to claim 1 for controlling the evaporation effect in an equipment layout comprising at least one coater station with its associated dryers, characterized in that the composite evaporation rate models of each subsystems comprised of a coater station with its associated dryers are chained mutually in order to compile a composite evaporation rate model for the entire equipment layout from said composite evaporation rate models of said subsystems.

09014557.092401
T04260.2597660

adcl
B1